

WHAT IS CLAIMED IS:

1. A method of controlling a switched reluctance machine in continuous current mode of operation, the switched reluctance machine comprising a rotor and a stator having at least one phase winding, the method comprising:

generating a first signal when the rotor reaches a first pre-determined position, which first signal causes a voltage to be applied to the phase winding, and

generating a second signal when the phase current in the phase winding reaches a first pre-determined level, which second signal causes the phase winding to freewheel, thereby controlling the output of the machine.

2. A method according to claim 1 further comprising:

generating a third signal, which third signal causes reversal of the voltage on the phase winding, when the rotor reaches a second pre-determined position.

3. A method according to claim 1 further comprising:

generating a third signal, which third signal causes reversal of the voltage on the phase winding, when the current in the phase winding reaches a second pre-determined level higher than the first.

4. A method according to claim 1 further comprising:

generating a third signal, which third signal causes reversal of the voltage on the phase winding, when the first of the following two conditions is met: the rotor reaches a second pre-

determined position or the current in the phase winding reaches a second pre-determined level higher than the first.

5. A method according to claim 1 wherein the first pre-determined level of phase current in the phase winding is set to be below the expected peak current of the phase winding.

6. A method according to claim 3 wherein the second pre-determined level of phase current in the phase winding is set to be above the expected peak current of the phase winding.

7. A control device for use in controlling the operation of a switched reluctance machine in continuous current mode of operation comprising a rotor and a stator having at least one phase winding, the control device comprising:

an input for receiving an angular position signal from position sensing means, said angular position signal being indicative of the angular position of the rotor with respect to the stator,

an input for receiving a phase current signal indicative of the current in a phase winding,  
an output to output a control signal to a switching arrangement, and  
a processor arranged to monitor the signals received at the inputs and to generate the control signal,

wherein the processor is arranged to generate a first control signal when the angular position signal indicates that the rotor is at a first pre-determined position, which first signal causes a voltage to be applied to the phase winding, and to generate a second control signal when

the phase current signal indicates that current in the phase winding is at a first pre-determined level, which second signal causes the phase winding to freewheel, thereby controlling the standing current in the phase winding.

8. A control device according to claim 7 wherein the processor is further arranged to generate a third signal, which third signal causes reversal of the voltage on the phase winding, when the rotor reaches a second pre-determined position.

9. A control device according to claim 7 wherein the processor is further arranged to generate a third signal, which third signal causes reversal of the voltage on the phase winding, when the current in the phase winding reaches a second pre-determined level higher than the first.

10. A control device according to claim 7 wherein the processor is further arranged to generate a third signal, which third signal causes reversal of the voltage on the phase winding, when the first of the following two conditions is met: the rotor reaches a second pre-determined position or the current in the phase winding reaches a second pre-determined level higher than the first.

11. A control device according to claim 7 wherein the first pre-determined level of current in the phase winding is set to be below the expected peak current of the phase winding.

12. A control device according to claim 9 wherein the second pre-determined level of current in the phase winding is set to be above the expected peak current of the phase winding.

13. A control system for use with a switched reluctance machine comprising a rotor and a stator having at least one phase winding, the control system comprising:

a switching arrangement,

position sensing means for generating an angular position signal indicative of the angular position of the rotor with respect to the stator,

a current sensor for generating a phase current signal indicative of the current in a phase winding, and

control means, operatively coupled to the switching arrangement, the position sensing means and the current sensor, for receiving the angular position signal and the phase current signal and for outputting a control signal to the switching arrangement,

wherein the control means is arranged, in a continuous current mode of operation, to generate a first control signal when the angular position signal indicates that the rotor is at a first pre-determined position, which first signal causes a voltage to be applied to the phase winding, and to generate a second control signal to actuate the switching arrangement when the phase current reaches a predetermined threshold and so cause the phase winding to freewheel, thereby controlling the standing current in the phase winding.